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INTERNATIONAL CARTOGRAPHY

By Robert H. Randall, M. ASCE

SURVEYING AND MAPPING DIVISION

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AMERICAN SOCIETY OF CIVIL ENGINEERS

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PAPERS

INTERNATIONAL CARTOGRAPHY

BY ROBERT H. RANDALL,¹ M. ASCE

SYNOPSIS

Modern transportation and communication facilities have made it imperative to secure cartographic cooperation on a much wider basis than has been necessary in the past. Attempts to secure such cooperation among the Pan American nations and among the other nations of the world are described.

The purposes, methods of operation, and accomplishments of several organizations engaged in international cartographic work are given, as well as details of the United Nations participation in the planning.

INTRODUCTION

The term "cartography" represents the science of preparing all types of maps and charts and is a term which includes every operation from original surveys to final printing of map copies. The types of maps and charts included are: (1) Topographic maps; (2) geologic maps, soil maps, vegetation maps, cadastral maps, hydrologic maps, hydrographic charts and aeronautical charts (all prepared on a topographic map base); (3) office-compiled maps showing the location, extent, and character of physical, economic, and social phenomena.

In the United States the term "surveying and mapping" has been used in the past to encompass the broad fields of activity covered by the foregoing definition. Difficulty has been encountered, however, in attempting to translate that expression into foreign languages and have it express all that it is intended to mean. For example, in the Spanish language there are no words that truly express the meaning of the term "surveying and mapping" as it is used in the United States. The term "cartography," on the other hand, is easily translated into that language, carrying the full meaning of the broad field of surveying and mapping. Also, it is the term which is generally accepted in international circles and which is being recognized in the United States as interest in world affairs increases.

NOTE.—Written comments are invited for publication; the last discussion should be submitted by October, 1951.

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During and since World War II the people in the United States have become more and more internationally minded. Their interest in map and chart coverage has grown from a primary concern with the area within their own borders to a world-wide interest. Their responsibilities in cooperating with other countries have required them to be more deeply concerned than ever before with the mapping of foreign areas. Now that modern transportation and communication facilities have brought all people on the planet within gun-shot of one another, reducing the world in a real sense to a small community, the need is for increased geographic knowledge. Basic maps and charts can supply this knowledge so that neighbors may be able to know each other and their environment and institutions in order to work together for the common good.

SURVEYING AND MAPPING IN THE AMERICAS

Pan American Institute of Geography and History.—In 1940 government officials and scientific organizations of the United States realized that closer cooperation and better understanding was needed among the nations of this hemisphere in accomplishing their surveying and mapping programs.² Accordingly, a group of such officials and representatives of scientific societies drew up a description of the kind of organization which they believed could accomplish the desired results. After this had been done, a study was made to determine whether or not such an organization was in existence. The study disclosed that the Pan American Institute of Geography and History was equipped by its charter and by-laws to sponsor a program of cartographic cooperation. The Institute is an intergovernmental organization (with headquarters in Mexico), which regularly holds general assemblies in which representatives of the member American republics meet to discuss common problems. At its Third General Assembly, held in Lima, Peru, in March-April, 1941, the United States delegate presented a resolution proposing the establishment of a commission on cartography. This resolution was adopted, thereby creating the Institute's present Commission on Cartography.

In general the aims of the Commission on Cartography are:

- a. To promulgate standards for the various classes of surveys and maps needed and produced by the various nations;
- b. to exchange information between the nations on current mapping activities;
- c. to exchange ideas and information on technical methods currently employed and those in the experimental or developmental stages;
- d. to advance education and training in the science of map-making;
- e. to exchange professors and instructors and to exchange technical personnel between mapping agencies in the various nations for in-service training.

The Commission has held five meetings, called "Consultations." The first of these meetings was held in Washington, D.C., in 1943, the second in Rio de Janeiro, Brazil, in 1944, the third in Caracas, Venezuela, in 1946, the fourth in Buenos Aires, Argentina, in 1948, and the last in Santiago, Chile, in

² "Cartographers Consider International as Well as National Mapping Needs," *Civil Engineering*, Vol. 19, November, 1949, pp. 30-31.

1950. The following technical committees and subcommittees have been created to activate the work of the Commission: Geodesy (with a subcommittee on gravity and geomagnetism and a subcommittee on seismology); Topographic Maps and Aerophotogrammetry; Aeronautical Charts; Hydrography (with a subcommittee on tides and a subcommittee on fluvial hydrography); Special Maps; and Urban Surveys.

Some of the accomplishments of the Commission are: (1) The adoption of uniform standards for geodetic operations; (2) standard specifications for topographic maps; (3) standard specifications for the production of the 1:1,000,000 scale aeronautical charts; (4) standardization of methods for geomagnetic observations and tidal work; (5) production of a glossary of standard cartographic terms; (6) publication of a manual on geodetic control surveys; (7) production, in cooperation with United States governmental agencies, of narrative and training films on cartographic subjects, such as "Introduction to Cartographic Activities in the United States," "Geodesy," "Reconnaissance Mapping by Trimetrogon Photography," and "Topographic Mapping by Photogrammetric Methods." These films, besides being circulated in the Americas, have attracted attention in other parts of the world, and copies have been made for a number of foreign nations.

Through the efforts of the Commission on Cartography, considerable progress has been made in the promotion of inter-American friendship, in the advancement of techniques, and in an accelerated program of map and chart production.

Inter-American Geodetic Survey.—The Inter-American Geodetic Survey was originally sponsored by and is actively supported by the Commission. This survey, operated by the Caribbean Command of the United States Department of National Defense, is engaged in a program of establishing a network of geodetic control and precise leveling linking the nations of Central and South America with the United States and Canada. The United States Government has entered into bilateral cooperative agreements with practically all of the Latin American nations. By virtue of these agreements, the personnel and facilities of the participating governments are used jointly to promote the program. It is planned that, upon completion of the triangulation and the leveling, a comprehensive program of topographic mapping and aeronautical chart revision and maintenance will be undertaken.

INTERNATIONAL CARTOGRAPHY

General Aspects.—With respect to international cartographic activities, there are existing international organizations concerned with a specific aspect of cartography, such as the International Hydrographic Bureau (IHB) and the International Civil Aviation Organization (ICAO). Both of these organizations are governmental in character. For some time, IHB has been engaged in establishing throughout the world the same kind of program in the field of hydrography that the Commission on Cartography has been conducting in the total field of surveying and mapping in the Americas. This agency has effected a continuing exchange of information about new charting activities, and considerable progress has been made in standardizing hydrographic chart

construction and symbols. The ICAO has been successful in creating a firm desire by most nations to prepare aeronautical charts of their territories along standard lines and in reaching agreement for the standardization of the various types of aeronautical charts required by civil aviation. Other organizations of considerable international importance but of professional rather than governmental character are the International Union of Geodesy and Geophysics (IUGG) and the International Geographic Union (IGU), which for some time have promoted close cooperation among geodesists and among geographers throughout the world.

The IGU was instrumental in establishing the Central Bureau of the International Millionth Map of the World. The Bureau is responsible for coordinating the production of this world series of maps at the scale of 1:1,000,000.

United Nations Cartography.—Late in 1945, a group of cartographers, broadly representative of the cartographic agencies and interests of the United States, met on several occasions to consider some of the problems relating to the cartographic services which might be required by the United Nations (UN) and its specialized agencies. It was recognized that, with the development of the work of the various UN organs, commissions, and specialized agencies, requirements for map services for current operations would become of increasing importance. It was the opinion of this group that attention should be given to the development and coordination of cartographic services in the UN in order that effective results might be obtained without duplication of effort and at minimum expense. As a result of the recommendations made by this group of cartographers, the United States delegation submitted a proposal on January 22, 1947, suggesting that the Economic and Social Council examine the problem of coordinating the cartographic services of the UN and its specialized agencies.

Shortly thereafter, the Pan American Institute of Geography and History and its Commission on Cartography, in a letter to the Secretary General of the UN, endorsed the United States proposal and suggested also that consideration be given to the matter of stimulating the national cartographic progress of the respective member states of the UN. The Institute further suggested that the Secretary General call together a group of expert consultants, selected on the basis of individual professional competence, to consult with him and representatives of the specialized agencies about integrating cartographic activities within the UN and about stimulating and coordinating international cooperation among the member nations. About the same time the French delegation proposed that steps be taken to insure better international cooperation in the matter of hydrography and oceanography. This action, in turn, was followed by a communication from the IGU, suggesting the expediting of the survey of the world and the unifying of the cartographic methods and processes.

In January, 1948, the delegation from Brazil presented to the Economic and Social Council of the UN a draft resolution to implement the foregoing suggestions. At the February 19, 1948 session the Council adopted the Brazilian draft. The essential part of the resolution is as follows:³

³ "Modern Cartography," United Nations Department of Social Affairs, Lake Success, N.Y., 1949.

"The Economic and Social Council * * * recommends:

1. That the Member Governments stimulate the accurate survey and mapping of their national territories;
2. That the Secretary-General take appropriate action, within the limits of budgetary availabilities;

(a) to further such efforts by promoting the exchange of technical information and other means, including the preparation of a study on modern cartographic methods and development of uniform international standards;

(b) to coordinate the plans and programmes of the United Nations and specialized agencies in the field of cartography, taking into account the work of the various governmental and non-governmental organizations and to report on the subject to a subsequent session of the Council;

(c) to develop close co-operation with cartographic services of interested Member Governments."

During the discussion of the resolution, it was emphasized that one of the first steps in the implementation of the resolution should be the calling together of a group of experts to draw up specific recommendations for the guidance of the Secretary General. Subsequently, at the Paris General Assembly of the UN, the Secretary General was authorized to invite five international experts to meet with representatives of the specialized agencies and interested international organizations. Accordingly, the Secretary General extended invitations to five individuals: R. Ll. Brown of Great Britain, Christovam Leite de Castro of Brazil, R. H. Randall of the United States, Ir. W. Schermerhorn of the Netherlands, and Robert Verlaine of Belgium. The experts met as a committee at Lake Success, N.Y., from March 21, 1949, to April 1, 1949, and at the first session the United States representative was elected chairman of the group. The meetings were attended by a number of delegates of specialized agencies and interested international organizations, acting in an advisory capacity. As a result of its deliberations the committee submitted to the Secretary General a report on its findings, including a number of recommendations.

Report on International Cartography.—It may be well to repeat here a part of the summary of the report of the committee of experts:

"This report undertakes to answer two questions. The first is, what should the UN do to stimulate and assist its Member Nations to procure for themselves the cartographic information they need, for their own purposes and as component parts of the United Nations; and what should be the procedure to do this. The second is, what sort of cartographic service does the United Nations need to carry out such a programme, for its own operations and in its relations with the specialized agencies; and what are the steps necessary to provide this service, and to assure its proper co-ordination with related services in those agencies."³

Specific recommendations were presented by the committee to promote cartographic cooperation among the UN nations. One of the proposals called for annual meetings under the auspices of the UN to review the progress of world mapping and to allow representatives of interested agencies to report on matters of mutual concern. To achieve cooperation on local matters,

regional meetings were proposed at which governments having common interests in particular areas could meet and discuss cartographic problems. Official representation of the UN would be secured by establishing a cartographic office in the Secretariat. This office would coordinate all mapping activities of the UN and be a source of information and advice on cartographic problems as well as a distribution center for maps. To assist the cartographic office it was proposed to establish a panel of consultants to give expert advice in their field.

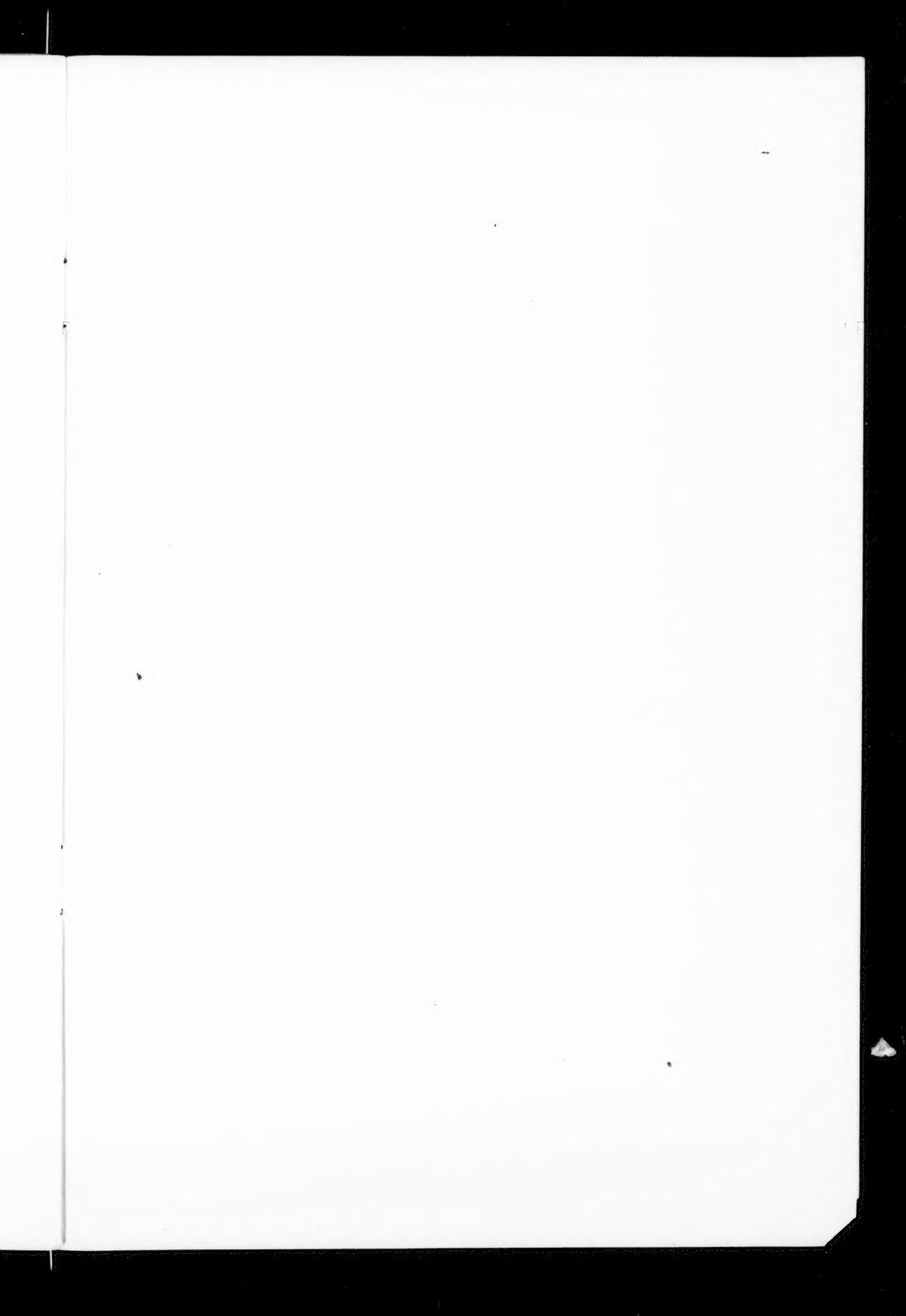
United Nations Economic and Social Council Resolution.—The report of the committee of experts and its recommendations were accepted by the Secretary General and subsequently submitted to the Economic and Social Council. At a meeting of the Council held in Geneva, Switzerland, on July 27, 1949, a resolution, submitted by Brazil, Chile, India, France, Peru, the United Kingdom, and Venezuela was adopted.³ This resolution acknowledged the urgent need for cartographic cooperation among the nations of the world and encouraged continued efforts to stimulate accurate surveying and mapping. In addition it called for speedy action on the recommendations of the committee of experts and on the publication of periodical summaries of cartographical progress and information.

The general opinion is that the Council's resolution is a good one and that the program it outlines will prove beneficial to all the member states of the UN.

SUMMARY

Joint planning and cooperation among countries will eliminate unnecessary duplication of effort and secure speedy selection of common standards and symbols. This standardization is important since modern transportation and communication facilities have brought the nations of the world intimately in contact.

Substantial progress is being made in the field of international cartography. The kind of information which basic map coverage can supply will constitute a useful tool and an increasingly recognized force for bringing about peaceful cooperation among men and among nations.



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